

Increasing the trustworthiness of the Internet infrastructure with 2STiC

Objectives

- Increase the trustworthiness of the Internet infrastructure
- Establish a collaborative research center in the field of trusted and resilient networking

Expected impact

- A more secure and transparent Internet infrastructure with more control capabilities for users
- Greater public confidence in the Internet, enabling further increased internet-dependency
- Increased digital autonomy for individuals, organisations, society
- Stronger Dutch and European research, education and industrial sectors

Approach

- Hands-on approach using testbeds and experiments
- Initial focus on supporting safety-critical services
- Exploration of both Internet extensions and clean-slate architectures
- Open programmable networks as a key enabler

Contact

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Security, Stability and Transparency in inter-network Communication (2STiC)

2STiC projects

- **CATRIN**: starting up the Responsible Internet
- **UPIN**: user-driven path verification and control
- **INTERSTCT**: secure and transparent networks for IoT deployments
- Co-financed by NWO and industry

8 PhD students

2 PhD students

1 PhD student



CATRIN blog



UPIN paper



INTERSTCT website

2STiC testbed

- 6 sites with programmable switches
- Interconnected by SURF's optical network
- For instance, to experiment with SCION-in-P4



2STiC testbed



SCION-in-P4

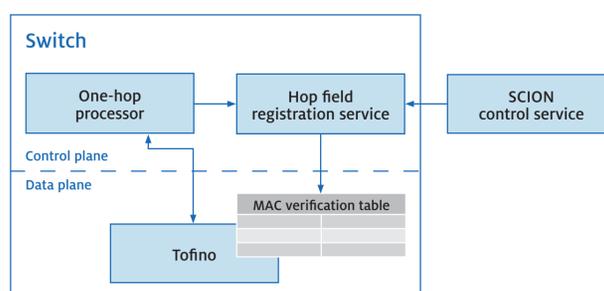
- Objective: assess feasibility of SCION on programmable network equipment
- Clean-slate Internet architecture for increased security and transparency
- P4 Domain-Specific Language on Intel Tofino chipset
- Results: working prototype and improvements of the SCION protocol



Blog



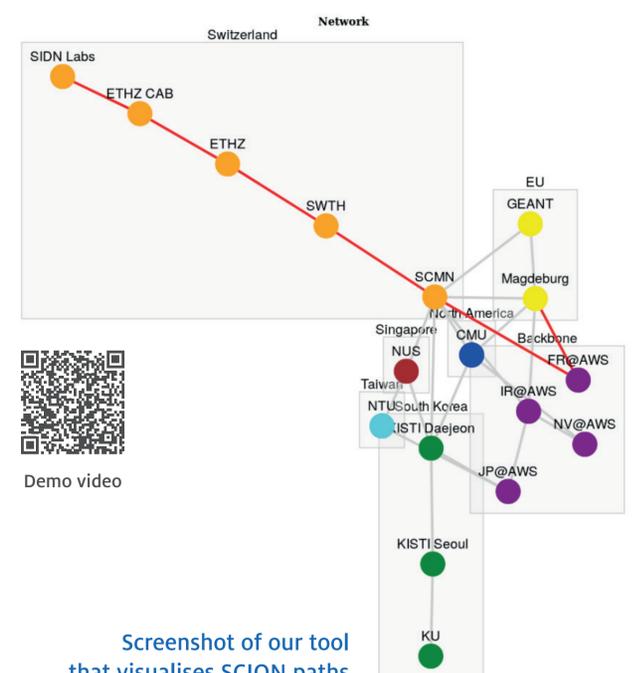
ACM CoNEXT paper



Overview of the different SCION-in-P4 components and their interaction

SCION-based path control

- Demonstrator to show how multi-path routing mitigates network outages
- Insight into and control over data paths in SCION-based networks



Demo video